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# The Secret of Zinc's Immunity-Boosting Power Revealed

Analysis by Dr. Joseph Mercola ✓ Fact Checked

April 15, 2022

Next

**STORY AT-A-GLANCE**

- Zinc has been acknowledged as an essential mineral for human health since the 1970s. More than 300 enzymes in your body require zinc for normal function, and it's well-recognized for its role in immunity and normal immune system development
- A March 2022 study has now shed new light on how zinc influences immune function. Zinc is required for the development of disease-fighting T cells, and for the regeneration of your thymus, which produces T cells
- A molecule inside your cells called GPR39 acts as a sensor that tracks changes in external zinc, and when the level rises, GPR39 triggers the release of a key renewal factor and thymic regeneration
- Zinc ionophores, which act as a shuttle to transport the zinc into the cell, improves zinc uptake. Zinc ionophores include hydroxychloroquine (HCQ), chloroquine, quercetin and epigallocatechin gallate (EGCG)
- Excessive zinc supplementation can cause an imbalance in your zinc-to-copper ratio, which can impair immune function. Copper, in turn, is interdependent on iron

Zinc has been acknowledged as an essential mineral for human health since the 1970s.[1] It's the second most abundant trace mineral found in the human body,[2] but your body cannot store it very well, so you need to consume foods with zinc every day to meet your body's needs.

More than 300 enzymes in your body require zinc for normal function,[3] and it's well-recognized for its role in immunity and normal immune system development.[4]

Research in the last decade has identified the crucial role that zinc plays in curtailing the length and severity of upper respiratory infections in particular. For example, a meta-analysis[5] published in 2017 found those who took a zinc supplement of 80 to 92 milligrams (mg) each day at the beginning of cold symptoms saw a reduction in the length of their cold by 33%.

Research published in 2020 also demonstrated that zinc is crucial to immune system function, and that deficiency can raise your risk of severe COVID-19 illness.[6] Early on in the pandemic, a number of doctors who were treating COVID patients recognized the importance of zinc and published early treatment guidelines that included it.[7,8,9]

## How Zinc Influences Your Immune Function

Zinc affects your immune function and helps prevent infections in a variety of ways. For example, data have shown:[10]

| |
|---|
| People who are deficient in zinc have an increased susceptibility to pathogens, as zinc helps prevent viruses from entering[11] and replicating[12] inside your cells. |
| Zinc mediates nonspecific immunity, including natural killer cells and neutrophils. |
| Zinc deficiency prevents the activation of T-lymphocytes, production of Th1 cytokine, and the ability of B lymphocytes to help. During deficiency, B lymphocyte development is also compromised. |
| Deficiency affects the function of macrophage cells, which can trigger cytokine production[13] and dysregulated intracellular death. Thus, with a deficiency in zinc, you not only get more viral infections, but these trigger an increase in the hyper inflammatory response. |
| Zinc is central to DNA replication, RNA transcription and cell activation and division. |
| Zinc supports growth and function of ciliary hairs in your respiratory system. One study published in the American Journal of Rhinology and Allergy[14] showed zinc stimulates ciliary beat frequency and may help improve mucociliary clearance, which is essential for clearing the lungs of mucous. Another group of scientists found that supplementing animals deficient in zinc affected the length of the cilia and number of epithelial cells in the bronchus.[15] |
| Zinc also improves your respiratory epithelial barrier.[16,17] |
| Zinc influences interferon-gamma (IFN-γ), which plays a significant role in defending against intracellular pathogens.[18] When there is a reduction in this cytokine, your immune function will be impaired. |

## Zinc Helps Immune System Regrow Immune Cells

A March 2022 study has now shed new light on how zinc influences immune function. As reported by Science Daily:[19]

> *"In a new study published online March 25 in the journal Blood, Fred Hutchinson Cancer Research Center scientists reveal two ways the mineral supports immunity and suggest how it could be used to improve health.*
>
> *Using mice, the team discovered that zinc is needed for the development of disease-fighting immune cells called T cells and prompts regeneration of the thymus, the immune organ that produces T cells.*
>
> *'This study adds to our knowledge of what zinc is actually doing in the immune system and suggests a new therapeutic strategy for improving recovery of the immune system,' said senior author Dr. Jarrod Dudakov, an immunologist at Fred Hutch ...*
>
> *As in humans, Iovino and Dudakov found that the thymuses of mice deprived of dietary zinc shrink and produce notably fewer mature T cells, even after as little as three weeks of a no-zinc diet. Iovino was able to show that without zinc, T cells cannot fully mature.*
>
> *He also found that zinc deficiency slows recovery of T-cell numbers after mice receive immune-destroying treatments akin to those given to patients about to receive a blood stem cell transplant. Conversely, extra zinc speeds this process, and T cells recover faster than normal."*

When zinc external to the cells rise, the cells release a regenerative factor that triggers renewal inside the thymus. T cells accumulate zinc as they develop, but when killed by a burst of radiation (or other damaging event), that zinc is released, raising the external zinc level.

> **"A molecule inside your cells called GPR39 acts as a sensor that tracks changes in external zinc, and when the level rises, GPR39 triggers renewal factor release and thymic regeneration."**

A molecule inside your cells called GPR39 acts as a sensor that tracks changes in external zinc, and when the level rises, GPR39 triggers renewal factor release and thymic regeneration. The researchers also found they could trigger this regenerative process using a novel compound that mimics rising zinc levels. Dudakov explained:[20]

> *"What we think is going on is, as you give zinc supplementation, that gets accumulated within the developing T cells. It gets stored and stored and stored, then the damage comes along and the zinc is released.*
>
> *Now you have more zinc than you normally would, and it can instigate this regenerative pathway. With the experimental compound we can just directly target GPR39 and basically get the same effect without any of that pretreatment."*

## Zinc Ionophores Improve Zinc's Effectiveness

While zinc is a crucial mineral for normal immune function, supplemental zinc is not very bioavailable. So, to improve zinc uptake into the cell, a zinc ionophore can be very useful. Zinc ionophores basically act as shuttles that transport the zinc through the cellular membrane into the cell, and getting the zinc into the cell is crucial for stopping viral replication.

Zinc ionophores that have received a lot of exposure in alternative media over the past two years are hydroxychloroquine (HCQ), chloroquine, quercetin and epigallocatechin gallate (EGCG).[21] Chances are you've heard of HCQ being used for COVID-19, but the real key in early treatment protocols that use HCQ is really the zinc. The primary role of the HCQ is to boost zinc uptake in the cell.

Quercetin, which is a natural supplement, also shuttles zinc but has antiviral,[22,23,24,25,26,27,28,29,30] anti-blood clotting, anti-inflammatory and antioxidant properties in addition to that.[31] Quercetin has also been shown to inhibit binding of spike protein to ACE-2 receptors, thereby blocking the ability of SARS-CoV-2 to infect human cells.[32]

Importantly, quercetin increases mitochondrial biogenesis in skeletal muscle, which suggests part of its antiviral effects are due to enhanced mitochondrial antiviral signaling.[33] By attenuating oxidative damage, it also lowers your risk of secondary bacterial infections,[34] which is actually the primary cause of influenza-related deaths.

When HCQ was banned from use for COVID, many wisely turned to quercetin, which is available over the counter. A number of studies have shown quercetin, when used early, lowers your risk of hospitalization and death from COVID,[35] and improves clinical outcomes.[36]

## Beware, Zinc Supplementation May Trigger a Copper Imbalance

For all its benefits, more is not better when it comes to zinc supplementation. In fact, it can backfire if you fail to maintain a healthy zinc-to-copper ratio.

As noted by Chris Masterjohn, who has a Ph.D. in nutritional sciences,[37] in an article[38] and series of Twitter posts,[39] "acceptable ratios of zinc-to-copper range from 2-to-1 to 15-to-1 in favor of zinc. Copper appears safe to consume up to a maximum of 10 mg/d" and "the maximum amount of zinc one could consume while staying in the acceptable range of zinc-to-copper ratios and also staying within the upper limit for copper is 150 mg/d."

Zinc intake at doses between 150 mg and 300 mg per day has been shown to decrease markers of immune function, Masterjohn warns, and it's "quite possible that the harmful effect of 300 mg/d zinc on the lymphocyte stimulation index is mediated mostly or completely by induction of copper deficiency."

Even intakes of 60 mg of zinc per day has been shown to lower superoxide dismutase activity, an enzyme that is important to antioxidant defense and immune function and depends both on zinc and copper for normal function.

So, a key thing to remember is that your zinc level is also impacted by your copper level, and an imbalance in this ratio can lead to health problems. The best way to readily achieve proper balance is to get your minerals from real food grown in healthy nutrient-rich soils.

## Do You Need More Zinc?

That said, zinc deficiency is common. Experts believe that about 17.3% of the global population are deficient[40] and it is estimated most people over 65 consume just 50% of the recommended amount.[41]

This deficit may in part be the result of soil depletion of zinc due to conventional farming methods and may also simply be that not enough zinc-rich foods are included in the diet. Severe deficiency, however, is rare,[42] and often associated with an inherited condition called acrodermatitis enteropathica.

Common signs[43] your body may need more zinc include lack of appetite, mental lethargy, impaired sense of taste or smell, frequent colds, flu or infections, hair loss[44] and poor neurological function.[45] Individuals at higher risk for zinc deficiency include those with malnutrition, persistent diarrhea,[46] the elderly, people with inflammatory or autoimmune diseases, chronic alcoholics, vegetarians and vegans.[47]

Although it may be necessary to supplement during illness when your body needs more zinc, I recommend trying to meet your daily requirement from foods. Foods rich in zinc include:[48,49,50]

| | | | |
|---|---|---|---|
| Alaskan King crab | Oysters | Almonds | Cashews |
| Kidney beans | Pastured chicken | Lamb | Chickpeas |
| Oatmeal | Grass fed beef | Cheddar or Swiss cheese | Yogurt |
| Mushrooms | Spinach | Pork chops | Pumpkin seeds |

Personally, I would be very cautious about taking more than 15 mg of zinc per day by supplement. If you are consuming large amounts of animal foods like beef, you may not even need any, as animal foods (see table above) are typically loaded with zinc, especially organ meats.

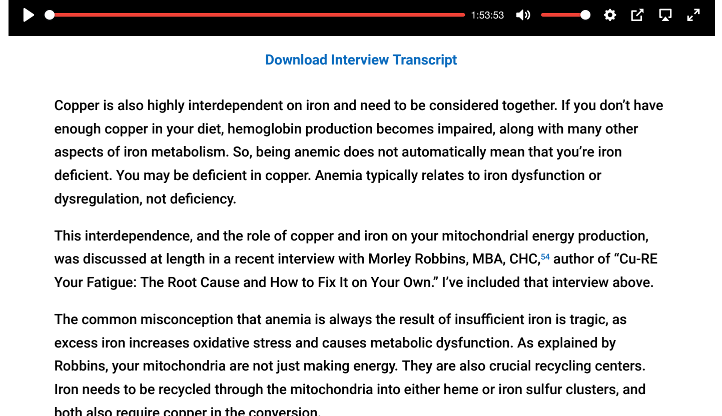
I eat about three-fourths of a pound of ground bison a day, which has 20 mg of zinc. I personally don't take any zinc supplement other than what I get from my food, which is likely an optimal form to maximize absorption.

If you opt for a supplement, Masterjohn recommends taking 7 mg to 15 mg of zinc four times a day, ideally on an empty stomach, or with a phytate-free food.[51] The recommended dietary allowance in the U.S. is 11 mg for adult men and 8 mg for adult women, with slightly higher doses recommended for pregnant and breastfeeding women,[52] so we're not talking about taking significantly higher dosages.

He also recommends getting at least 1 mg of copper from food and supplements for every 15 mg of zinc you take.[53] It's best to get your copper from food and not a supplement.

Good sources include oysters, grass fed beef liver and other organ meats. Whole food vitamin C can also be helpful, as vitamin C contains an enzyme called tyrosinase, which has two copper atoms in it. Acerola cherry is one excellent source. You also want plenty of saturated fats in your diet, as copper is a fat-soluble mineral. If you don't have fat in your diet, your ability to absorb copper plummets.

## Mind Your Copper-to-Iron Ratio Too

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Copper is also highly interdependent on iron and need to be considered together. If you don't have enough copper in your diet, hemoglobin production becomes impaired, along with many other aspects of iron metabolism. So, being anemic does not automatically mean that you're iron deficient. You may be deficient in copper. Anemia typically relates to iron dysfunction or dysregulation, not deficiency.

This interdependence, and the role of copper and iron on your mitochondrial energy production, was discussed at length in a recent interview with Morley Robbins, MBA, CHC,[54] author of "Cu-RE Your Fatigue: The Root Cause and How to Fix It on Your Own." I've included that interview above.

The common misconception that anemia is always the result of insufficient iron is tragic, as excess iron increases oxidative stress and causes metabolic dysfunction. As explained by Robbins, your mitochondria are not just making energy. They are also crucial recycling centers. Iron needs to be recycled through the mitochondria into either heme or iron sulfur clusters, and both also require copper in the conversion.

Inside your body, the ideal ratio of iron-to-copper is, on average, 50-to-1. Ideally, you would have about 5,000 mg of iron and about 100 mg of copper in your body.

## Most People Have Elevated Iron

The fact of the matter is, most men and postmenopausal women have excessive iron and can benefit from regular blood donation. As explained by Robbins, you accumulate about 1 mg of iron every day (based on the research of leading Iron biologists), and unless you lose blood, you retain that amount. By the time you are 65, you may have accumulated over 20,000 mg of storage iron.

So, again, more often than not, anemia (characterized as low serum iron and low serum ferritin) is not a sign of insufficient iron but rather a sign that the iron is not being properly recycled due to insufficient copper.

This storage iron will radically increase the oxidative stress and tissue damage in your body. It also is one of the most common causes of fatigue because of how it impairs the mitochondrial production of energy.

When you donate a pint or half-liter of blood, you remove approximately 250 mg of iron from your tissue iron. Donating four pints a year is far more than most people do, but you can see that if you had 20,000 mg of storage iron, it would take you 20 years of donating blood four times a year to get it down to a healthy level.

While regular blood donation is a highly effective way to lower your iron, losing 10% of your blood in one sitting can be a problem for many. It's easier on your system to remove blood in smaller amounts once a month on the schedule I have listed below. If you have congestive heart failure or severe COPD, you should discuss this with your doctor, but otherwise this is a fairly appropriate recommendation for most.

| | |
|---|---|
| Men | 150 ml |
| Postmenopausal Women | 100 ml |
| Premenopausal Women | 50 ml |

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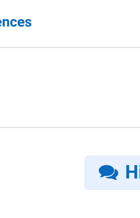


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by Doctor Joseph Mercola

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**MZ1227**
Joined On 11/18/2006 7:02:45 PM
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THANK YOU THANK YOU Dr. Mercola for mentioning that a person can overdose on Zinc. I overdosed by my ignorance in 2021(I have heard that it's possible, but was desperate to protect my body and kick the covid virus), and it was SCARY, because I experienced really bad vertigo to the point of looking like a drunk, and nausea. The vertigo was what got my attention of course, because I've never had it prior. When I would bend over to tie my shoes I would just lose balance and felt like falling over. I became so scared because driving a car became difficult and I felt like I was on a rollercoaster because of the vertigo.

I started googling and of course discovered it was because I DISPLACED almost all the copper in my brain with too much zinc (I was taking zinc glycinate up to 6-7 tablets a day). I quickly went to a health food store and bought liquid copper and within about 3 days the vertigo subsided, and within 2 weeks was back to normal. What makes me shake my head is companies selling zinc CHEWABLES and not warning people of potential of overdose.

An ER Dr and famous YouTuber ChubbyEmu made a video of a person who ODed on zinc, fell from vertigo and broke his hips. Edit: I wish that more doctors, especially Dr. Mercola would mention or bring up vertigo as a sign of overdose of zinc. I was surprised when I was researching for myself that not many sources would bring this up, or they would say it is a "rare side effect". In this age I don't think it is that rare, and I can't imagine how many people are suffering from vertigo, and not even realizing why they have it.

Reply | Mark as Spam | Posted On 4/15/2022 3:30:42 AM
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**juststeve**
Joined On 1/5/2012 11:13:54 AM
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Chewables, like antiacids hawked as having calcium to build up your bones when the antiacids formula's most likely cancel out any absorption of calcium. It was most likely a marketing scheme to came to cancel out bad press on the dangers of aluminum. At the time is was known many people had low calcium levels. Now it's known D3, M7K, Magnesium, Potassium with Calcium need to be in a balance is more important than gulping down antiacid tablets. Looks like an actual Healthcare System preventing dis-ease needs to have a blood test protocol to address if we are in a right range for us. Who knows what other factors may play in our needs? Winter, Northern regions as opposed to Southern, or the mineral makeup in an area we live in may impact the balance. Here, there is a high concentration of Iron & it shows up in water.

Mark as Spam | Posted On 4/15/2022 4:54:47 AM
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**robinlillian**
Joined On 6/20/2006 2:38:49 AM
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MZ1227: People stop using the chewables, because they taste really bad when you have enough zinc. If you had been using a chewable, you might not have overdosed on the zinc.

Mark as Spam | Posted On 4/15/2022 8:39:43 AM
Like | Dislike

**foveola**
Joined On 8/28/2021 5:59:01 PM
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Glad you brought this to my attention. When I added up the milligrams of zinc I have been taking, it came out to around 80mgm/d not counting food intake. I had been having trouble with vertigo, which is the spinning due to the otoliths in the inner ear and also balance problems which is controlled by the cerebellum: two different areas. I got the vertigo corrected with the Epley maneuver but the balance stayed. Even went to physical therapy for balance exercises. Now it appears that it probably is due to too much zinc accumulating!

Mark as Spam | Posted On 4/15/2022 10:36:41 AM
Like | Dislike

**MZ1227**
Joined On 11/18/2006 7:02:45 PM
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@ robinlillian - Yes and no when it comes to the tastes of chewables. I worked in a health food store for years, and got to taste quiet a number of chewables. The companies will all add SO MANY SWEETENERS (many of which are not natural) just to cover up the mineral tastes. Some still have a slight mineral after-taste, some end up being so sweet from all the chemical sweeteners that they taste like candy. I try to not rely on chewables for that very reason, I do not want to add chemical sweeteners to my diet. It is hard as it is to shop for food without these stimulating, inflammation causing allergenic chemical sweeteners being snuck into so many foods. I'd rather just take a pill with JUST what I asked for (vitamin/mineral). Believe me, even natural companies will add chemical artificial sweeteners to their "natural" vitamin chewables. It drives me so mad!!!

Mark as Spam | Posted On 4/15/2022 1:13:14 PM
Like | Dislike

**MZ1227**
Joined On 11/18/2006 7:02:45 PM
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@ foveola - I was surprised how hard it was to find information about the vertigo being linked to too much zinc and not enough copper! Even Dr. Mercola didn't mention anything about this being such a strong side effect. I can't even imagine how many people are experiencing vertigo without knowing where it is coming from! SMH. Taking copper should fix it. Also back off from the zinc for a while. Zinc is fat soluble and will stay in the body for up to 3 days.

Mark as Spam | Posted On 4/15/2022 1:19:00 PM

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**mpk3149**
Joined On 8/19/2014 2:48:43 AM
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I've had patients lately doing the same thing. People are so scared of Covid, that they are ruining their health taking too much of everything.

Mark as Spam | Posted On 4/15/2022 3:12:51 PM

Like Dislike

**bee70578**
Joined On 1/24/2014 4:03:10 PM
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BTW my cousin had similar problems here in the UK. It turned out she was getting an overdose of Zinc from her toothpaste.

Mark as Spam | Posted On 4/15/2022 5:13:20 PM

Like Dislike

**Arlen1**
Joined On 8/1/2020 1:45:38 PM
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I have Zicam rapid melts and nasal swabs. It's basically a Zinc supplement that's supposedly ehanced to absorb quicker than a regular Zinc supplement. You don't take it every day. You take it at the first signs of cold symptoms.You're supposed to take the rapid-melts by letting it dissolve in your mouth before swallowing. The nasal swabs are soaked in a zinc solution and you swab the inside of your nasal passages with it. If I do this at the first sign of a cold, my symptoms go away within 24 hours. They used to have a nasal gel that worked better than the swabs.

It worked so good the FDA banned it. It was basically zinc solution in aloe vera. You massaged it way up into your sinus cavities after squirting it into your nostrils. It was a little offensive but the results were phenomenal! Of cours, the FDA is going to ban anything that's safe, effective, and cheap. Especially if it works. We witnessed that first with Covid19. They prohibited HCQ and Ivermectin, but approved a deadly/failed ebola drug for covid19.

Reply | Mark as Spam | Posted On 4/15/2022 6:51:52 AM

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**jamNjim**
Joined On 2/20/2008 11:15:54 PM
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My doctor from the 1990's actually introduced me to Zicam. Back when it first came out it was only available in the gel form. He swore by it! I was skeptical (brainwashed)! I thought "how in the hell is a gel, you squirt up your nose, going to stop a cold"? The first time I used it I thought OMG! It was awful! But, the next day I was over it. I couldn't believe it! I figured it was just an accident so the next time I had that twinge in my nose and the hay-fever attack I get with every cold I passed on using the Zicam. I got sick and my head-cold lasted 5 days! I used it religiously after that up until the FDA banned it (2005??). Since then I have learned how to optimize zinc absorption and uptake into the cells.

It would be nice to be able to get the old Zicam gel. I tried making my own with less than optimal results. It was bad, but it did stop the cold! I don't recommend trying making your own zinc fortified nasal gel. I was mixing liquid Zinc Gluconate, that you can buy at a supplement store, with Aloe gel. It was HORRIBLE! Don't try this at home! I was going to try just aloe to see if it was the aloe causing the reaction or if it was the Zinc and I couldn't bring myself to try it again. I think I just had the zinc concentration too high. IDK, I was NOT brave enough to try it again. However, it did work!

Mark as Spam | Posted On 4/15/2022 11:39:28 AM

Like Dislike

**mpk3149**
Joined On 8/19/2014 2:48:43 AM
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Zinc in the nose can do permanent damage to your ability to smell. Plus, many are highly allergic to AloeVera. I rarely agree with the FDA pulling supplements, but I think they were right on this one.

Mark as Spam | Posted On 4/15/2022 3:15:19 PM

Like Dislike

**dividingcricker**
Joined On 2/25/2012 10:40:20 AM
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I really don't know all the answers ....but things are making more sense .....This Company has a liquid testing kit and Supplement kit (Liquid) to self test 9 minerals ....I found this idea years ago from a Doctor ..his web explained that needed minerals can taste sweet or desirable ....and minerals we don't need or are over abundant taste terrible ..or awful ..nasty ....This Company is BODYBIO in Millville New Jersey ...I think that ts worth some time to research or a call ....Their CEO Ed Cain has a few youtubes that have some very interesting tales ....In my daily research I also found Iodine / Iodide and Boron that seem to reverse or absolutely add to our immune system ......It took a very long time to see a connection to one mineral ...you really can't add one or two minerals without gumming up the works for the whole system ...you need to add the needed minerals ????and figuring this out can be a very hit or miss endeavor ......hope this helps a few people

Reply | Mark as Spam | Posted On 4/15/2022 9:09:49 AM

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**bee70578**
Joined On 1/24/2014 4:03:10 PM
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Yes I like BodyBio products, their PhosCol is excellent too - Especially before sleep, a small amount will give a very restful night even if interrupted. (I have noisy neighbours who come home at all times)

Mark as Spam | Posted On 4/15/2022 5:22:11 PM

Like Dislike

**jamNjim**
Joined On 2/20/2008 11:15:54 PM
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Quote from Dr. M.: "I eat about three-fourths of a pound of ground bison a day, which has 20 mg of zinc. I personally don't take any zinc supplement other than what I get from my food, which is likely an optimal form to maximize absorption." I totally agree and there's science to back this up. It's puzzling as to why Dr. Mercola didn't elaborate on this more. The enzymes that are released in the digestion of animal protein is critical in getting Zinc across the Intestine/Blood barrier. Here is a very good article with links to PubMed and other sources on this topic: academic.oup.com/jn/article/130/5/1378S/4686381#:~:text=Thus%2C%20in%2.. .

Hit the "Page Down" button 2 or 3 times to get to the "Protein Quantity and Quality" section that goes into the details of getting the most Zinc absorption from your meals. Zinc is like Vit-D in that it only gets absorbed when certain digestive conditions are met in the small intestine. Taking it on an empty stomach, like Masterjohn suggest, will do you little to no good. Like Vit-D, it actually helps to have some fat with the quality animal protein. Unfortunately, cow milk doesn't work. Supposedly the Casein protein negates Zinc absorption. However, WHEY protein is supposed to enhance absorption. So it might be possible to take Zinc with a whey protein shake and a spoonful of coconut oil. It's been a while back, but I believe Dr. Mercola used to recommend something like that to enhance Vit-D absorption (the good old days). Usually what works for Vit-D also works for Zinc.

Reply | Mark as Spam | Posted On 4/15/2022 7:31:39 AM

Like Dislike

**czd5979**
Joined On 7/16/2016 1:11:41 PM
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thank you for sharing the article!

Mark as Spam | Posted On 4/15/2022 11:53:45 AM

Like Dislike

**fvtomasch**
Joined On 3/11/2017 7:33:24 AM
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Problem is that how do we get all the blood tests needed to at the very least determine a baseline of nutrient stores in our bodies? Many insurance companies will not pay unless doctor determines there is a medical reason for the tests. Out of pocket costs by labs like Cyrex Labs are not cheap and a doctor still has to authorize the tests. So in the meantime it is just a guess on what out nutrient status is. It is hard to tell without lab work if we are deficient or optimum. For most people it is how do we feel at any given time and without blood tests it is hard to determine what nutrient we are low in. Ask yourself when was the last time you had say a magnesium RBC (red blood cell) test not the standard serum level? They are more specialized tests and have to be sent out to labs that can do the test. Here in northern Illinois they are sent to the Mayo Clinic in Minnesota depending on what hospital you go to.

Reply | Mark as Spam | Posted On 4/15/2022 7:20:35 AM

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**caws**
Joined On 1/12/2009 12:42:21 PM
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There are online labs where you can order most tests at substantial discount from Quest, Labcorp, Great Plains & Doctors Data without your doctor. They are self pay & results are private unless you choose to share. Doctors send you to Quest & Labcorp anyway so they have to accept the results. This saves you a trip to doctor if tests are negative and you don't have to argue to get the test. An example is the vitamin D test. Most insurance will not pay for this test [Medicare tried to charge me $250] but if you go to www.directlabs.com you can get it for $50. Another one is www.walkinlab.com. Both have holiday discount sales too and post results in your account usually next day. Hope this helps.

Mark as Spam | Posted On 4/15/2022 8:07:16 AM

Like Dislike

**montrealep**
Joined On 3/1/2012 5:01:57 PM
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In discussing zinc, I think it's important to mention pyroluria. This condition is not well know, even by doctors, but more common than we think. People with pyroluria need more zinc than those without this condition and the symptoms are quite varied. It is known for causing social anxiety, but you can have the condition and not be very socially anxious (possibly bc of working on it or other positive experiences). Anyone with anxiety should check themselves out with the questionnaire below: www.everywomanover29.com/blog/pyroluria-questionnaire-from-the-antianx..

Reply | Mark as Spam | Posted On 4/15/2022 8:43:27 AM

Like Dislike

**montrealep**
Joined On 3/1/2012 5:01:57 PM
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Here are some Common Signs and Symptoms 1. Being anxious, shy, or fearful or experiencing inner tension since childhood, but hiding these feelings from others 2. Having bouts of depression or nervous exhaustion 3. Poor dream recall, stressful or bizarre dreams, or nightmares (low vitamin B6) 4. Excessive reactions to tranquilizers, barbiturates, alcohol, or other drugs, in which a little produces a powerful response (low vitamin B6) 5. Preferring not to eat breakfast, experiencing light nausea in the morning, or being prone to motion sickness (low vitamin B6) 6. White spots or flecks on the fingernails or opaquely white or paper-thin nails (low zinc)

7. Liquid zinc sulfate having a mild taste or tasting like water (low zinc) 8. Poor appetite or having a poor sense of smell or taste (low zinc) 9. Joints popping, cracking, or aching; pain or discomfort between the shoulder blades; or cartilage problems (low zinc) 10. Pale or fair skin or being the palest in the family, or sunburning easily, now or when younger 11. Disliking protein or having ever been a vegetarian or vegan 12. Being sensitive to bright sunlight or noise 13. Upper abdominal pain on your left side under the ribs or, as a child, having a stitch in your side as you ran 14. Frequent fatigue 15. Being prone to iron anemia or low ferritin levels 16.

Tending to have cold hands or feet 17. Having frequent colds or infections, or unexplained chills or fever 18. Reaching puberty later than normal or having irregular menstruation or PMS 19. Having allergies, adrenal issues, or problems with sugar metabolism 20. Having gluten sensitivity 21. Neurotransmitter imbalances, especially low serotonin 22. For women, belonging to an all-girl family or having look-alike sisters 23. For men, having a mother from an all-girl family or a mother with look-alike sisters, or all the females in the mother's family bearing a strong resemblance to each other..., See the article linked above for more

Mark as Spam | Posted On 4/15/2022 8:46:15 AM

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**juststeve**
Joined On 1/5/2012 11:13:54 AM
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Geritol, for Iron poor blood to beat back fatigue. Grandmas go to. Big sponsor for her other favorite, the Lawrence Welk show. Personally, if zinc isn't taken on the regular all kinds of problems crop up. It may be environmental or past exposures to heavy metals and toxic work environment chemicals, maybe even just a genetic thing, but low zinc can be felt. It was a real problem for a while as the Lockout the Competition Campaign was in full swing you could not find zinc on our shelves anywhere. What a relief when we finally could pick it up again. Again, personally, it does seem to keep the catching colds down to a minimum for me.

Reply | Mark as Spam | Posted On 4/15/2022 5:01:02 AM

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**DebbyW**
Joined On 5/27/2010 9:07:35 AM
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I take a zinc-copper supplement to make sure to keep the balance.

Mark as Spam | Posted On 4/15/2022 6:47:22 AM

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**Guillermou**
Joined On 4/7/2015 8:47:48 AM
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It should be noted that many processes in iron metabolism depend on the state of copper and zinc, so it seems appropriate to provide their supply separately from iron. Dietary factors known to enhance non-heme iron absorption include vitamin C and animal tissues, while other dietary factors (such as phytates and calcium inhibit non-heme iron absorption). Copper deficiency is thought to cause systemic iron deficiency and anemia by reducing the level and activity of two copper-containing ferroxidases (hephaestin and ceruloplasmin) that are essential for the export of iron from the intestine and from iron stores Dietary copper deficiency during pregnancy was associated with reduced fetal iron stores, suggesting a role for copper in transporting iron to the placenta.This association may be mediated by the recently identified multicopper zyklopen ferroxidase, which is more highly expressed in the placenta and other tissues such as the heart and kidney.

Trials of zinc supplementation in adult humans have shown adverse effects of dietary zinc on iron homeostasis, as evidenced by the ability of zinc to decrease iron absorption and the findings of lower serum iron in pregnant women than received zinc supplementation compared to groups receiving no supplementation or receiving iron supplementation.

Although the mechanisms underlying these effects remain unclear, there is evidence for a direct stimulatory effect of zinc on intestinal expression of DMT1 and ferroportin and for a common transport pathway in the liver, possibly mediated by zinc. academic.oup.com/.../1815311 (2013)

Mark as Spam | Posted On 4/16/2022 5:32:22 AM

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**Guillermou**
Joined On 4/7/2015 8:47:48 AM
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It is also known that iron is essential not only for the host but also for pathogens (bacteria, fungi and parasites), and its excess can lead to infections and inflammation of the tissues, unfavorable change of the intestinal microbiota (lactic acid bacteria with little iron requirement are displaced by other more syderophilic microorganisms and potential pathogens, eg, Escherichia coli and Salmonella sp.) and intestinal inflammation and metabolic endotoxemia. Although viruses do not require iron, the infected cell needs it for effective virion synthesis, so host iron overload also enhances viral progression Excessive iron supplementation can be detrimental, so many authors advocate evaluation of iron status of pregnant women for optimal supplementation.

link.springer.com/.../BF00140609 (2003) academic.oup.com/.../4664653 (2007) This is thought to be a consequence of downregulation of iron absorption due to elevated hepcidin concentrations that occur due to inflammation associated with adiposity. The ability of pregnancy itself and/or pregnancy-associated weight gain to affect systemic inflammatory markers, hepcidin, and iron status is poorly studied. Más información sobre este texto de origenPara obtener más información sobre la traducción, se necesita el texto de origen Enviar comentarios Paneles laterales

Mark as Spam | Posted On 4/16/2022 5:32:49 AM

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**Guillermou**
Joined On 4/7/2015 8:47:48 AM
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Inflammation is an important factor in the control of iron metabolism through proinflammatory cytokines released by activated immune cells. Interleukin (IL)-1, IL-6, IL-22, and interferons (IFNs) induce hepcidin secretion that blocks the absorption of dietary iron and its release from reticuloendothelial stores in the liver and spleen. Such a functional state of iron deficiency (which is not true iron deficiency) protects against pathogen growth and oxidative stress and is described as anemia of inflammation (AI) or anemia of chronic disease (ACD). It is characterized, among others, by the iron status and the following indices of inflammation: elevated serum hepcidin concentration, low total serum iron and Hb (<11 g/dL), elevated C-reactive protein (CRP) level, erythrocyte sedimentation rate (ESR) and IL-6.

Anemia of inflammation is a moderate anemia characterized by normochromic and normocytic erythrocytes. Elevated hepcidin in inflammation is especially dangerous in pregnancy because it can limit the availability of iron to the placenta and fetus. link.springer.com/.../BF00140609 (2019) www.sciencedirect.com/science/article/pii/S016748891200016X?via%3Dihub (2012)

Mark as Spam | Posted On 4/16/2022 5:33:17 AM

Like Dislike

**Guillermou**
Joined On 4/7/2015 8:47:48 AM
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On average, adults accumulate about 4 g of iron (45 mg/kg bw), mostly contained in the hemoglobin of circulating erythrocytes (60-70%), 20%-30% in storage proteins (hepatic and splenic ferritin and haemosiderin), 10% in myoglobin, cytochromes and enzymes and 1% (about 4 mg) associated with a transport protein, transferrin (TF). A daily intake of dietary iron corresponds to about 1 to 2 mg, and a similar amount is excreted, mainly with desquamated epithelium. For metabolic processes, iron is repeatedly used from disintegrated old erythrocytes in the liver and spleen, then their metabolism works almost in a closed loop. Figure 1 schematically presents the utilization of iron in the body. The expression of both iron transporters, DMT-1 and FPN, is regulated by systemic iron resources: when there is a lot of iron, it decreases and increases again when the reserves are empty.

Additionally, at the systemic level, iron homeostasis is regulated by a small hepatic hormonal protein, hepcidin, which acts as a master iron regulator. Hepcidin, by binding to FPN, triggers the internalization and degradation of this membrane transporter and inhibits the release of iron from the intestine into the circulation. Likewise, the release of iron from reservoirs in hepatic and splenic macrophages is also blocked. Several factors can affect hepcidin synthesis, including iron availability, intensity of erythropoiesis, tissue hypoxia, and the presence of proinflammatory molecules.

Mark as Spam | Posted On 4/16/2022 5:33:53 AM

Like Dislike

**Guillermou**
Joined On 4/7/2015 8:47:48 AM
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Lactoferrin LTF (colostrum from mothers and mammals) in addition to the direct destruction of pathogens, regulates the activities of cells of innate and adaptive immunity, such as monocytes, macrophages, dendritic cells, neutrophils, eosinophils, mast cells, natural killer cells ( NK), B and T lymphocytes. LTF acts as an immune regulator, depending on the actual immune status of the host. Therefore, it can activate immune cells to secrete cytokines such as IL-1, IL-2, IFN, IL-8, IL-12, IL-15, and tumor necrosis factor (TNF)-α, increasing their anti-infective effects and anti-tumor activities and, in parallel, the LTF-inducing IL-10 and transforming growth factor (TGF)-β, which reduces the excessive reactivity of immune cells, can restrain inflammatory processes in both aseptic inflammation and septic.

The important aspect of LTF activity is the regulation of physiological and pathological T helper (Th)1 and Th2 cellular immune responses, limiting excessive inflammatory responses by changing their balance. Interestingly, LTF also has a prebiotic property that protects and stimulates the growth of symbiotic bacteria in the gut and reproductive organs.

LTF supplementation also improves intestinal barrier function (by increasing the expression of intestinal barrier proteins, including ZO-1, occludin, claudin-1, and E-cadherin), preventing LPS translocation, and following inflammation. Therefore, LTF exhibited a broader and more complete normalizing action on iron metabolism. On the other hand, the inorganic iron formulations even intensified the inflammatory state, which further worsened the body's iron homeostasis.

Mark as Spam | Posted On 4/16/2022 5:34:26 AM

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**Guillermou**
Joined On 4/7/2015 8:47:48 AM
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Orally administered LTF (as native or partially digested peptide) can reach the gut where it interacts with the microbiota, epithelium, and gut-associated lymphoid tissue (GALT), activated by LTF immune cells and/or released cytokines reached by the circulation in the main organs. affecting the function of other immunocompetent cells. In this way, LTF can increase the immunity of all mucous membranes (eyes, gastrointestinal, urinary and reproductive tracts and respiratory tract) protecting against the penetration of pathogens and the development of excessive LTF inflammation. pubmed.ncbi.nlm.nih.gov/29163511 (2017) www.frontiersin.org/.../full (2018) pubmed.ncbi.nlm.nih.gov/22292525 (2012) www.mdpi.com/.../1323 (2019) pubmed.ncbi.nlm.nih.gov/33685299 (2021) www.mdpi.com/.../htm (2021)

Mark as Spam | Posted On 4/16/2022 5:34:58 AM

Like Dislike

**MaryRN**
Joined On 11/23/2009 11:22:14 AM
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One overlooked source of zinc is denture care products, especially the adhesives, and the zinc in those is absorbed into the body through the mucous membranes of the mouth, There are adhesives that are zinc free so if you do have dentures read your labels. MMC88121

Reply | Mark as Spam | Posted On 4/15/2022 4:27:54 AM

Like Dislike

**robinlillian**
Joined On 6/20/2006 2:38:49 AM
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MaryRN: Reasonable amounts of zinc are good for you. Zinc isn't poison. Quite the reverse. The problem is that too much of anything is no good.

Mark as Spam | Posted On 4/15/2022 8:42:16 AM

Like Dislike

**bowgirl**
Joined On 12/3/2011 6:17:03 AM
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I sense many of us have over done zinc. I've taken it for years, 1 50 mg every 10 days or so but have taken it several times a week during the covid years. I'm going back to occasional use. I eat lots of greens daily 8 months a year from my garden and was delighted to read this morning dandelion greens are a good source.

Reply | Mark as Spam | Posted On 4/15/2022 4:26:35 AM

Like Dislike

**badboy2**
Joined On 11/15/2010 5:08:52 AM
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Iron deficiency anemia is so well known that unless one realizes anemia has many causes, iron is often taken when it may actually be harmful. According to nutritional experts, iron and vitamin E should not be taken within 10 hours of each other, because they are an antagonist to each other. But if vitamin E is deficient, not only is iron absorption and hemoglobin formation impaired, but also the essential fatty acids forming part of the cell structure are so altered by oxidation that cells break down uniformly throughout the body.

One good sign of an iron deficiency is flat fingernails starting from the thumb to the small finger. This has been corrected by taking iron supplements, at least it works for me. Other possible causes are, mumps, thyroid disease, diabetes, syphilis. In my case iron supplements corrected the nail problem in just one day. Another iron deficiency is striations/ridge lines on the nails from the cuticle out to the end of the nails. Though striations are mainly caused by a protein deficiency. This is mostly seen in the elderly due to low stomach acid and a low absorption rate.

Another sign of an iron deficiency on the nails is a concave dip, (spooning) on the nail, mainly seen on the thumb looking from the side. This is called Koilonychia. www.bing.com/search?q=nail%20spooning&qs=n&form=QBRE&=%25e.. The article does not state that it is an iron deficiency, but i know for a fact that it is. For I use up a lot of iron, and a dip on my nail happens when I am deficient, and iron supplements cures the problem within a day.

Reply | Mark as Spam | Posted On 4/15/2022 2:08:26 PM

Like Dislike

**mercola14**
Joined On 4/12/2010 2:53:54 PM
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"Masterjohn recommends taking 7 mg to 15 mg of zinc four times a day, ideally on an empty stomach, or with a phytate-free food.51 The recommended dietary allowance in the U.S. is 11 mg for adult men and 8 mg for adult women, with slightly higher doses recommended for pregnant and breastfeeding women, so we're not talking about taking significantly higher doses." Okay -so I know that I'm bad in math -but 4x15 mg.= 60 mg. of zinc which in my book at least IS a" slightly higher dose " than 11 mg. (550% higher !! ) Most nutritionally minded doctors recommend 30 mg.of zinc per day -which is also the recommended dosage to help prevent covid . DO NOT TAKE zinc sulphate which is also used for killing rats , is very poorly absorbed and often causes nausea and stomach distress.

Reply | Mark as Spam | Posted On 4/15/2022 8:54:46 AM

Like Dislike

**forbiddenhealing**
Joined On 2/21/2011 9:51:43 AM
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Why guess? A hair mineral/metal analysis will reveal heavy metal burdens and mineral levels and ratios...the hard chemistry of the system. Iron, copper and calcium are essential, yet skewed levels mean oxidative stress or biochemical malfunction. Once levels are known they can be supplemented or chelated/detoxed. Seasalt/seaweed/seafood reflect the mineral proportions of the oceans from whence we crawled and Vitamin C/NAC help regulate mineral/metal movements, absorbtion, electrolyte performance and oxidation states. Blind supplementation based on vague symptoms can quickly un-balance body chemistry.

Reply · Mark as Spam · Posted On : 4/15/2021 7:15:15 AM

Like · Dislike

**Chaska**
Joined On 5/10/2007 4:23:27 PM
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Hair test shows good mineral levels/heavy metals. Sitting of Zn is not too much according to my hair test. I may be low in copper. When I was too high in copper I was able to absorb copper premixed with Zn. Mine is a genius every where which I can't say for most people on the Mo. Mo detoxes copper. Never take copper without Zn which may hurt the mine. People can take Zn without Copper. Lyme/Babesia may be a factor in your case. Lyme/Babesia may also affect Zn/Fe etc. Lyme/Babesia may also affect Zn/Fe etc. Lyme/Babesia may also affect Zn/Fe etc

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As always thank you, However the email headline was dangerous bathroom product--where is that article please.

Reply | Mark as Spam | Posted On 4/15/2022 9:09:31 PM

Like Dislike

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**schreib69**

Joined On 3/5/2022 9:46:45 AM

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this letter is contradictory: Dr Mercola: recommends no more than 15 mg per day of zinc using supplements However, in the following paragraph: "If you opt for a supplement, Masterjohn recommends taking 7 mg to 15 mg of zinc four times a day" So, which is it 15 mg or 4 x 15 mg?

Reply | Mark as Spam | Posted On 4/15/2022 12:31:29 PM

Like Dislike

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**20thCenturyFox**

Joined On 8/11/2020 4:49:48 PM

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I fail to see that either Mercola or Masterjohn are advocating a one-size-fits-all intake. The RDA in the US is 11mg/day for men and 8 mg/day for women. That doesn't work for everyone either. But the article as a whole, and even more so the experiences of commenters, clearly recommends testing...and not only testing zinc. If your zinc is high, stop supplementing and think about how to bring it down! If your zinc is low, you may need to supplement a lot more than any stock recommendation to bring it closer to the middle of the range. (My zinc is still going down after supplementing 25 mg/day for more than a year! (Maybe I'll take Masterjohn's suggestion to break it up into smaller more frequent doses.) But if your zinc/copper ratio is already high, don't just add zinc; make sure you are adding 1mg copper for every 15mg of zinc. The executive summary of this article is not how much zinc everyone should supplement every day!

Mark as Spam | Posted On 4/15/2022 2:54:09 PM

Like Dislike

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**jack23orourke**

Joined On 1/6/2019 9:20:38 AM

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Is it possible to use a magnet and remove iron from the blood using a process similar to plasma donation?

Reply | Mark as Spam | Posted On 4/15/2022 8:01:12 AM

Like Dislike

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**dividingcricker**

Joined On 2/25/2012 10:40:20 AM

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No ...if it is a serious matter you can give blood and change your diet .....Many fortified foids have toxic amounts of added iron Youtube The Iron Magnet Cereal Test .....So maby foods have added iron that is rust , metal filings etc ...It is hard to believe but very true ....Iron , if very high , is called Hemachromatosis ..it can become deadly

Mark as Spam | Posted On 4/15/2022 9:22:00 AM

Like Dislike

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**grulla**

Joined On 1/17/2012 8:03:55 AM

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If in fact that works (???), I would be concerned about removing too much iron from the blood, as Red Cross checks the hemoglobin for a minimum of 13 and a max of 17-19. And ferritin levels are considered yet another matter. As for plasma donations, best to stick with whole blood donations instead, as Dr. Jeffrey Dach explains on his website, jeffreydachmd.com/2013/04/donating-blood-prevents-heart-disease/ paragraph subtitle, "Cautions at the Blood Bank- Avoid Automated Blood Collection, Apheresis, ABC," www.visitcompletecare.com/.../giving-blood-restrictions

Mark as Spam | Posted On 4/15/2022 9:23:37 AM

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**jamNjim**

Joined On 2/20/2008 11:15:54 PM

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They separate plasma from red blood cells using a centrifuge. I don't recall the RPM's the centrifuge spins at, but it uses centrifugal force to sperate the blood from the plasma. The blood is then removed from the centrifuged blood/plasma and the plasma is put in a sub-zero freezer. Then saline is used to thin the blood. The saline drip bag that you put on the donor is used to flush out the lines (prevent clotting) and dilute the blood you're putting back into the donor. I know this because I was a phlebotomist. I worked at a prison where I took plasma from inmates. Got to pay for college somehow!

Mark as Spam | Posted On 4/15/2022 11:14:21 AM

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